

What is claimed is:

1. An automated method of launching a balloon comprising:  
providing a collapsible protective cover comprising a flexible material forming an inner region;  
providing a balloon;  
5 inflating the balloon under the direction of a controller, wherein at least a portion of said balloon is inflated within at least a portion of said inner region of said protective cover;  
opening at least a portion of said protective cover forming an opening in said protective cover; and  
10 releasing said balloon through said opening of said inflatable structure.
2. The method of claim 1, further comprising at least partially inflating said protective cover.
3. The method of claim 2, wherein said operation of at least partially inflating said protective cover is initiated prior to said step of inflating said balloon.
4. The method of claim 2, wherein said operation of at least partially inflating said protective cover extends at least a portion of said protective cover outside of a protective housing.
5. The method of claim 2, wherein said operation of at least partially inflating said protective cover extends said balloon from a first configuration to a second configuration.
6. The method of claim 5, wherein said first configuration comprises a packed configuration and said second configuration comprises an at least partially extended configuration.

7. The method of claim 5, wherein said operation of inflating said balloon is initiated after said balloon is extended from said first configuration to said second configuration.

8. The method of claim 1, wherein said flexible material is provided within in a protective housing.

9. The method of claim 1 or 8, wherein said balloon is provided extending at least partially within said inner region of said protective cover.

10. The method of claim 9, wherein said balloon is releasably attached to at least a portion of said protective cover.

11. The method of claim 10, wherein said balloon is releasably attached to said at least a portion of said protective cover via a loop wrapped around a portion of said balloon.

12. The method of claim 8, wherein said balloon is releasably attached to said protective housing.

13. The method of claim 1, wherein said flexible material comprises at least one of a polyethylene material and a Tyvek material.

14. The method of claim 1, wherein said balloon comprises a weather balloon.

15. The method of claim 1, wherein said protective cover comprises at least one extender for extending said protective cover from a first configuration to a second configuration.

16. The method of claim 15, wherein said first configuration comprises a packed configuration and said second configuration comprises an at least partially extended configuration.

17. The method of claim 15, wherein said at least one extender comprises an inflatable extender.

18. The method of claim 17, wherein said inflatable extender comprises an inflatable support structure attached to said flexible material of said protective cover.

19. The method of claim 18, wherein said protective cover comprises a biasing structure for biasing said protective cover towards said first configuration.

20. The method of claim 15, wherein said protective cover comprises a biasing structure for biasing said protective cover towards said first configuration.

21. The method of claim 20, wherein said biasing structure comprises an elastic material for retracting said protective cover.

22. The method of claim 1, wherein said protective cover is biased toward a retracted configuration.

23. The method of claim 22, wherein said protective cover is at least partially extended from a packed configuration when said operation of inflating said balloon is completed.

24. The method of claim 23, wherein said protective cover is retracted from said at least partially extended configuration when said operation of opening at least a portion of said protective cover is performed.

25. The method of claim 24, wherein said balloon extends through said opening of said protective cover following said operation of retracting said protective cover from said at least partially extended configuration.

26. The method of claim 1, wherein said operation of opening at least a portion of said protective cover comprises passing a current through a wire.

27. The method of claim 26, wherein said wire comprises a nichromium wire.

28. The method of claim 26, wherein said current heats said wire.

29. The method of claim 28, wherein said heated wire melts a link to open at least a portion of said protective cover.

30. A balloon launcher comprising:  
a collapsible protective cover comprising a flexible material forming an inner region;  
a gas inlet for receiving a gas;  
5 a gas outlet for mating with a balloon;  
a valve operable between said gas inlet and said gas outlet for inflating a balloon with said gas within said inner region of said collapsible protective cover;  
a controller adapted to control said valve to inflate a balloon within said protective cover, to open an opening in said protective cover and to release a balloon through said  
10 opening in said protective cover.

31. The balloon launcher of claim 30, wherein said protective cover comprises an inflatable extender for extending said protective cover.

32. The balloon launcher of claim 31, wherein said controller is further adapted to control a second valve to inflate said inflatable extender.

33. The balloon launcher of claim 30, wherein said controller is further adapted to at least partially inflate said protective cover.

34. The balloon launcher of claim 30, wherein said protective cover is provided within in a protective housing.

35. The balloon launcher of claim 30, wherein said protective cover comprises a means for releasably engaging a portion of a balloon.

36. The balloon launcher of claim 35, wherein said means for releasably engaging a portion of a balloon comprises a loop attached to said protective cover for wrapping around a portion of a balloon.

37. The balloon launcher of claim 30, wherein said flexible material comprises at least one of a polyethylene material and a Tyvek material.

38. The balloon launcher of claim 30, wherein said protective cover comprises at least one extender for extending said protective cover from a first configuration to a second configuration.

39. The balloon launcher of claim 38, wherein said first configuration comprises a packed configuration and said second configuration comprises an at least partially extended configuration.

40. The balloon launcher of claim 38, wherein said at least one extender comprises an inflatable extender.

41. The balloon launcher of claim 40, wherein said inflatable extender comprises an inflatable support structure attached to said flexible material of said protective cover.

42. The balloon launcher of claim 41, wherein said protective cover comprises a biasing structure for biasing said protective cover towards said first configuration.

43. The balloon launcher of claim 38, wherein said protective cover further comprises a biasing structure for biasing said protective cover towards said first configuration.

44. The balloon launcher of claim 43, wherein said biasing structure comprises an elastic material for retracting said protective cover.

45. The balloon launcher of claim 30, wherein said protective cover is biased toward a retracted configuration.

46. A balloon launcher comprising:  
a fill tube comprising a mandrel for inflating a balloon and a retractable rim;  
a switch comprising a fixed first member and a sliding second member having a first configuration for locking a balloon to said mandrel and a second configuration for retracting said rim to release a balloon from said mandrel;  
5 an actuator comprising a first electrical contact connected to said fixed first member of said switch, a second electrical contact connected to said sliding second member of said switch, a meltable wire connecting said first electrical contact to said second electrical contact and a biasing means for biasing said contacts in an outwardly radial direction; and  
10 a controller for controlling the flow of a gas through said mandrel to inflate a balloon and for applying a current to said actuator when the balloon is inflated,  
wherein said current melts said meltable wire and said biasing means extends said actuator to change a state of said switch from said first configuration to said second configuration.  
15

47. A balloon launcher comprising:  
a housing comprising a release valve for filling a balloon with an inflating gas and for releasing a balloon after it has been inflated;  
a tether attached to said housing;  
5 a pin attached to said tether for releasably engaging a spool connecting a balloon and a sonde, wherein said pin, when engaged, prevents said spool from unwinding and, when disengaged, allows said spool to unwind and distance said sonde from a balloon.

48. A method for inflating a balloon comprising:  
providing a nozzle comprising an inlet and an outlet;  
providing a balloon having an opening, the opening being attached around the outlet of the nozzle;

5 providing a flexible tube comprising a first end and a second end, the first end being attached to the outlet of the nozzle inside the opening of the balloon and the second end extending into the a neck of the balloon away from the nozzle;

flowing a gas through the nozzle and flexible tube into the balloon, wherein the pressure of the gas maintains the second end of the flexible tube in an open configuration;  
10 and

stopping the flow of gas into the balloon, wherein a pressure of the gas within the balloon collapses the second end of the tube preventing gas from flowing out the inlet of the nozzle.

49. A balloon having a one-way fill valve comprising:

a nozzle comprising an inlet and an outlet;

a balloon having an opening, the opening being attached around the outlet of the nozzle;

5 a flexible tube comprising a first end and a second end, the first end being attached to the outlet of the nozzle inside the opening of the balloon and the second end extending into the a neck of the balloon away from the nozzle;

wherein pressure applied from a gas entering the flexible tube from the nozzle maintains the second end of the flexible tube in an open configuration when the pressure applied from the gas entering the flexible tube from the nozzle is greater than an interior  
10 pressure in the balloon, and

wherein the interior pressure of the balloon collapses the second end of the tube when the interior pressure of the balloon is greater than the pressure applied from a gas entering the flexible tube from the nozzle is less than the interior pressure of the balloon.